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**UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/900,254	07/25/97	PFEUFFER	P 227507350

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EXAMINER
YAO C.A

ART UNIT
1733

PAPER NUMBER

DATE MAILED: 10/13/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/900,254

Applicant(s)

Pfeuffer

Examiner

Yao

Group Art Unit

1733

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 8-31-98.
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-7 is/are pending in the application.
- Of the above claim(s) 5-7 is/are withdrawn from consideration.
- ☐ Claim(s) is/are allowed.
- ☒ Claim(s) 1-4 is/are rejected.
- ☐ Claim(s) is/are objected to.
- ☐ Claim(s) are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of References Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is difference between a calendered fibrous web (i.e. see the process step 2, calendering the fibrous web) and a nonwoven fabric.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton (US 2,862,542) in view of Norton (US 2,862,542) and (Shinjou (US 4,728,394) or Schultheiss et al (US 4,180,611).

Nakamura et al, directed to forming a filter element (8), disclose bonding an air cleaning filter medium (13) (taken to be a fibrous web) to another filter medium (14) by application of

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heat and pressure to form a laminated filter medium, wherein the fibrous web (13) is either a paper or nonwoven fabric made from a mixture of either rayon or vinylon fibers and undrawn polyester fibers; and Nakamura et al further teach that the filter element (8) comprises a corrugated filter medium (col. 2 lines 46-60; col. 4 lines 31-52; figure 2). Though not expressly disclosed, the rayon or vinylon fibers in Nakamura et al are taken to be drawn synthetic fibers. In any event, it would have been obvious in the art forming the filter element of Nakamura et al to use drawn rayon or vinylon fibers because such is conventional in the art of making fibers; and because it is well within the purview in the art to chose from the among the conventional fibrous material.

Nakamura et al do not expressly suggest calendering the fibrous web (13) and the filter medium (14) together in forming the laminated filter medium. However, it would have been obvious in the art to calender the fibrous web (13) and the filter medium (14) together in forming the laminated filter medium because as noted above, Nakamura et al teach applying heat and pressure to bond the fibrous web (13) and the filter medium (14); because it is a common practice in the art of making filters to calender fibrous webs comprising drawn and undrawn synthetic fibers to reinforce the fibrous webs as taught for example by Schultheiss et al (example 1); and because it is also old in the art of making filters to apply heat and pressure in laminating fibrous layers comprising undrawn fibrous material and polyester fibers (taken to be drawn fibers) using a calendering technique as taught for example by Shinjou et al (example 1).

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Nakamura et al do not teach how to corrugate the laminated filter medium to form the corrugated filter medium. In particular, they are silent on corrugating the laminated filter medium (i.e. bonding the fibrous web) using a profiled calender rolls. However, it would have been obvious in the art to corrugate the laminated filter medium using a profiled calender rolls in forming the corrugated filter medium of Nakamura et al because Norton teaches calendering a fibrous web using a pair of profiled calender rollers to form a corrugated filter medium (col. 1-26; figures 1-2) and because the art would have reasonably applied known effective techniques in corrugating the laminated filter medium to form the corrugated filter medium.

Though not expressly taught, since the method recited in this claim is indistinguishable to the method taught by the art of record (i.e. appears to be identical), it is reasonably taken that the corrugating of the laminated filter medium, using a pair of profiled calender rolls, bonds the fibrous web in a tension-free manner, without inhomogeneities over the cross-section of the cross-section of the fibrous web and without the use of flat bonding.

Lastly, Nakamura et al do not teach forming spacers in the filter medium. However, such would have been obvious in the art making the filter medium of Nakamura because it is a common practice in the art to provide spacers in the filter medium in order to maintain air gap in the filter medium and/or to properly position the filter medium.

With respect to claims 2-4, these claims would have been obvious in the art making the filter element of Nakamura et al for reasons of record set forth in Paper No. 6 paragraph 5.

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Response to Arguments

4. Applicant's arguments filed on 08-31-98 have been fully considered but they are not persuasive.

Applicant essentially argues on page 2-3 that "... in *Nakamura et al.* ..., the filter layer is formed as a nonwoven fabric prior to any bonding step using the undrawn synthetic fibers, and that the fibrous web of drawn and undrawn synthetic fibers which form the layer 13 cannot be formed into a non-woven fabric by bonding between calender rolls, because such a step would melt the undrawn synthetic fibers before the step of bonding layers 13 and 14 together. Thus, in *Nakamura et al.*, the layer 13 ... must be formed into a nonwoven fabric in some manner, which would prevent the undrawn synthetic fibers from melting before they are overlaid by the layer 14 and subsequently bonded" (emphasis in original). In response, it is unclear what would prevent the undrawn synthetic fibers from melting before they are overlaid by the layer 14 and subsequently bonded. Moreover, in the context of Applicant's invention, what exactly is the difference between a fibrous web and a nonwoven fabric? In any event, Examiner's position is that, it would have been obvious in the art making the filter element of *Nakamura et al* to corrugate the laminated filter medium, which comprises a fibrous web (13) and filter medium (14), using a pair of profiled calender rolls and thereby intrinsically bonding the fibrous web for reasons set forth above. Note, the corrugating step is performed after (not before) the fibrous web (13) and filter medium (14) have been laminated. The problem envisioned/alleged by Applicant is unlikely to transpire, if ever.

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Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Chuan Yao** whose telephone number is (703) 308-4788. The examiner can normally be reached on Monday-Thursday from 8:00 AM-5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mike Ball, can be reached on (703) 308-2058. The fax number in Group Art Unit 1733 for official papers (i.e. papers that will

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be entered as part of the file wrapper) is (703) 305-1733 and for unofficial papers (e.g. proposed amendments) is (703) 305-7115.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0651.

WBE
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October 7, 1998